

What is claimed is:

1. A drive apparatus comprising:

a primary-side member including a plurality of armatures with coil windings and a magnetic body; and

a secondary-side member including a plurality of permanent magnets, wherein

the multiple armatures are arranged at predetermined intervals and the secondary-side member is arranged in the primary-side member with a gap, and wherein a position detector is disposed between the multiple armatures.

2. A drive apparatus comprising:

a primary-side member including a plurality of armatures with coil windings and a magnetic body; and

a secondary-side member including a plurality of permanent magnets, wherein

the armatures include a first opposing portion and a second opposing portion, each opposing portion having an upper magnetic pole tooth portion and a lower magnetic pole tooth portion opposing each other via a gap, wherein the secondary-side member is disposed in the gap of the first opposing portion and that of the second opposing portion, wherein

the multiple armatures are disposed at predetermined intervals, and a position detector is disposed between the multiple armatures.

3. A drive apparatus comprising:

a plurality of armatures comprising a first core and a second core, the first core having a first opposing portion and a magnetic body, the second core having a second opposing portion and a magnetic body, wherein each opposing portion includes an upper magnetic pole-tooth portion and a lower magnetic pole-tooth

portion opposed to one another; and
a secondary-side member disposed in a gap between each of the first and the second opposing portions, wherein
the upper magnetic pole tooth portion of the first core and the upper magnetic pole portion of the second core are alternately disposed above the secondary-side member,
the lower magnetic pole tooth portion of the first core and the lower magnetic pole tooth portion of the second core are alternately disposed below the secondary-side member,
a coil is wound commonly around the first and the second core, and
a position detector is disposed between the multiple armatures.

4. The drive apparatus according to claim 1, wherein the intervals of the armatures are approximately $k \cdot P + P/M$ (k is 0,1,2,3,...), wherein P is the magnetic pole pitch of the armatures, and M is the number of phases of the drive apparatus.

5. The drive apparatus according to claim 2, wherein the intervals of the armatures are approximately $k \cdot P + P/M$ (k is 0,1,2,3,...), wherein P is the magnetic pole pitch of the armatures, and M is the number of phases of the drive apparatus.

6. The drive apparatus according to claim 3, wherein the intervals of the armatures are approximately $k \cdot P + P/M$ (k is 0,1,2,3,...), wherein P is the magnetic pole pitch of the armatures, and M is the number of phases of the drive apparatus.

7. The drive apparatus according to claim 1, wherein the position detector comprises a plurality of position detecting portions, and wherein the intervals at which the multiple position detector portions are disposed are approximately $P/6$ or $P/3$, wherein P is the magnetic pole pitch of the secondary-side member.

8. The drive apparatus according to claim 2, wherein the position detector comprises a plurality of position detecting elements, and wherein the intervals at which the multiple position detector elements are disposed are approximately $P/6$ or $P/3$, wherein P is the magnetic pole pitch of the secondary-side member.

9. The drive apparatus according to claim 3, wherein the position detector comprises a plurality of position detecting elements, and wherein the intervals at which the multiple position detector elements are disposed are approximately $P/6$ or $P/3$, wherein P is the magnetic pole pitch of the secondary-side member.

10. An XY table utilizing the drive apparatus according to claim 1 as the drive source.

11. An XY table utilizing the drive apparatus according to claim 2 as the drive source.

12. An XY table utilizing the drive apparatus according to claim 3 as the drive source.